

ABSTRACT

THESIS: Mice Model of Iron Overload (SB6.Cg-Tg (Thy1-YFPH) 2Jrs/J):
Study of Immune Function and Autoimmunity

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Both Immune cells and pathogenic microorganisms require iron for proliferation and multiplication. However, role of iron supplementation on immune function is still unclear. Studies show that iron-deficient mice are protected from developing Experimental Autoimmune Encephalomyelitis (EAE), an animal model of Multiple Sclerosis (MS) in humans. In this project, we developed a mice model of iron overload in (B6.Cg-Tg (Thy1-YFPH) 2Jrs/J mice). Seven mice were injected (ip), 100 μ l iron dextran and seven with Phosphate buffered saline (PBS), five days/week for four weeks. Blood samples verified iron overload 170 versus 138 μ g/dl ($P < 0.005$). Flow Cytometry revealed high CD3⁺T-cells and low CD4⁺ and CD8⁺ T-cell ratio in experimental. Histological sections indicated perivascular immune cell infiltrations in the brain, but not in the spinal cord. Confocal microscopy of spinal cord sections showed myelinated axons with no breaks. The absence of demyelination and clinical signs, but high CD3⁺ with low CD4⁺ T-cells suggests an altered immune cell function in iron overload mice that needs further exploration.